licensees as to whether and to what extent the stations are in active operation providing maritime public correspondence services, and whether they require alternate channels for the continued provision of public correspondence services. As part of a limited survey, the Coast Guard attempted to contact each one of the 7 VPC licensees listed in Appendix D of the NPRM. The survey yielded the following information: three licensees provide VPC services on assigned channels; one licensee provides very limited VPC services (due to a lack of demand for such services) and intends to terminate such services; one licensee does not provide any VPC services and only provides limited land mobile; one licensee does not believe that it provides any VPC services; one licensee could not be located and there was no indication from information directory services that any VPC services were available in the license area. In order to protect operations of AIS in navigable waterways, the incumbent VPC stations must vacate Channels 87B and 88B, and if appropriate, migrate to a different frequency. For those licensees currently providing services, action to ensure their continued operation is appropriate.

The Commission notes that there were "a few" private land mobile radio licensees operating on Channel 87B.[49] These licenses were granted pursuant to former section 90.283 of the Commission's rules, which authorized land mobile service operations on frequencies allocated for maritime mobile operations, assuming that no harmful interference was caused to maritime mobile operations. NTIA recommends that the Commission undertake a survey to

[49] The Commission's ULS database indicates that there are seven land mobile licenses issued for 161.975 MHz (Channel 87B): WPGA969, State of Arizona; WPGA968, State of Arizona; WPGA967, State of Arizona; WPGA970, State of Arizona; KZT919, Morris Coop Oil Association; WNQQ375, Frontier Refining Inc.; WPKA286, Stanley Kuehn.

assess the status of these licenses.[50] If these stations are in operation, then their operation must be on a non-interference basis and they may not cause interference to AIS operations on Channel 87B. In the event they do cause interference to AIS operations, they must cease operations until such time as the interference is alleviated.

K. AIS BASE STATION EQUIPMENT ISSUES SHOULD BE ADDRESSED IN A FURTHER RULEMAKING.

On June 27, 2002, the Commission issued a Public Notice indicating that during the pendency of the rule making, the FCC Laboratory will coordinate review of applications for certification of AIS equipment with the Coast Guard to ensure that the equipment meets all applicable international standards and requirements.[51] The Commission completed a rule making regarding the certification of shipborne (Class A) AIS equipment,[52] and the IEC is developing certification standards for base station equipment.[53] Once these base station standards for AIS equipment are developed, we propose that the Commission issue a further notice of proposed rulemaking concerning their authorization, coordination[54] and operation. Since operation of AIS

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[50] 47 C.F.R. § 90.283 (1997). This provision was eliminated in the *Second Report and Order,* Amendment of the Commission's Rules Concerning Maritime Communications, PR Docket No. 92-257, 12 FCC Rcd 16949 (1997).

[51] Applications For Equipment Authorization Of Universal Shipborne Automatic Identification Systems To Be Coordinated with U.S. Coast Guard to Ensure Homeland Security, *Public Notice,* 17 FCC Rcd 11983 (OET 2002). The international standards and requirements identified are: IMO Resolutions A.694(17) and MSC.74(69), Annex 3; ITU-R Rec. M.1371-1; IEC Standards IEC 60945, IEC 61162 and IEC 61993-2.

[52] Amendment of Parts 13 and 80 of the Commission's Rules concerning Maritime Communications, *Second Report and Order, Sixth Report and Order, and Further Notice of Proposed Rule Making,* WT Docket No. 00-48, 19 FCC Rcd 1320 (2004).

[53] IEC Technical Committee No. 80, Maritime Navigation and Radiocommunication Equipment and Systems, Working Group 14. *See* http://www.navcen.uscg.gov/marcomms/iec.htm and http://www.iec.ch/cgi-bin/procgi.pl/www/iecwww.p?wwwlang=e&wwwprog=dirdet.p&progdb=db1&committee=TC&number=80.

base stations is limited to safety purposes, use by commercial entities should be limited to those having a clear safety-related need.[55] A configuration management process for use of application identifiers, required in using AIS binary messages, will also be required.[56] These base station issues should be considered in further rulemaking. In the meantime, AIS base station equipment issues should be handled on a case-by-case basis as indicated in the June 27, 2002 Public Notice.

L. THERE IS AN EMERGING REQUIREMENT TO EXTEND AIS COVERAGE TO SUPPORT HOMELAND SECURITY

To meet its homeland security responsibilities in effectively understanding vessel activity in the maritime domain, the Coast Guard must detect, classify, identify and track vessels operating in U.S. waters or approaching the United States. A Coast Guard primary operational goal is persistent wide area surveillance of these vessels, including the ability to track all vessels within 2000 nautical miles of the United States.[57] Nationwide AIS will provide detection, identification and tracking of AIS-equipped vessels approaching or operating in the maritime domain where little or no vessel tracking capability currently exists. Congress recognized this need and allocated funds for AIS.[58] Congress has also required the Coast Guard to report on the

[54] Certain base stations can, for example, assign certain AIS VHF data link broadcast slots as FA (fixed access) TDMA. If two such base stations covering overlapping service areas conflict in their assignment of FATDMA slots, transmissions from shipboard AIS may become corrupted.

[55] *See e.g.* IMO Resolution MSC.74 (69), Annex 3 and ITU-R Rec. M.1371-1.

[56] *See* ITU-R Rec. M.1371-1 Annex 2 para. 3.3.8.2.4.1.

[57] *See* Appendix (1), Statement Of Mr. Jeffrey P. High On The U.S. Coast Guard's Maritime Domain Awareness Efforts before the Subcommittee on Coast Guard and Maritime Transportation Committee on Transportation and Infrastructure Committee on Transportation and Infrastructure, U.S. House of Representatives, October 6, 2004 at 7 (Jeffery High Statement).

[58] See H. Rep. 108-280, pp. 41-42 (Conference Report on FY 2004 Appropriations for DHS); H. Rep. 108-

acquisition and installation schedule of a nationwide AIS coverage system which includes long range tracking.[59] This nationwide AIS system may be comprised of a combination of terrestrial-based, airborne and unmanned aeronautical vehicle (UAV) platforms, as well as low earth orbiting satellite systems.

The feasibility of using high altitude and space based platforms to extend the range of AIS is being evaluated.[60] On May 20, 2004, the Coast Guard awarded a contract to develop and supply AIS capability through a commercial low earth orbit satellite data communications provider. This AIS-equipped satellite is scheduled for launch in early 2006. Use of satellites for detection and tracking of AIS-equipped ships is recognized by the IMO.[61] Implementation of such a long range identification and tracking system is also mandated in the MTSA.[62]

Because of the potential for harmful interference resulting from the implementation of a satellite based receiver, it may be necessary to clear Channels 87B and 88B throughout the entire U.S. not just VPCSAs 1-9. To avoid these potential interference problems, the Coast Guard has requested that the federal government clear Channel 88B.[63] It is suggested that the FCC note this

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774, pp. 57-58 (Conference Report on FY 2005 Appropriations for DHS).

[59] Coast Guard and Maritime Transportation Act of 2004, P.L. 108-293, 118 Stat. 1029.

[60] *See* Jeffery High Statement and Appendix (2) Coast Guard High Altitude/Satellite AIS Monitoring Plans.

[61] *See* COMSAR 9/Inf.4, Satellite-based AIS Long-Range Identification and Tracking (LRIT) Maritime Traffic Monitoring Using a Space-Based AIS Receiver, submitted to the IMO by Norway.

[62] *See* MTSA at § 70115.

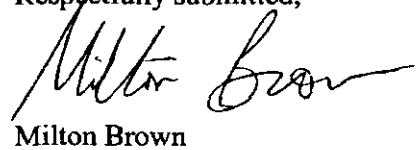
[63] *See* Letter dated November 12, 2004 from Joseph D. Hersey, Jr., United States Coast Guard,

emerging AIS requirement and give consideration to clearing Channel 87B on a nationwide basis. The Coast Guard is planning to provide a technical study examining the potential interference impact to a satellite based receiver from co-channel VPC and land mobile operations.

III. CONCLUSION

NTIA hereby submits the foregoing Comments and requests the Commission to take actions consistent with the views expressed herein.

Respectfully submitted,



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December 29, 2004

Interdepartment Radio Advisory Committee Representative to Executive Secretary, IRAC (Appendix 3).

APPENDIX 1

U. S. Department of Homeland Security

United States Coast Guard

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DEPARTMENT OF HOMELAND SECURITY

U. S. COAST GUARD

STATEMENT OF

STATEMENT OF MR. JEFFREY P. HIGH

ON THE

U.S. COAST GUARD'S MARITIME DOMAIN AWARENESS EFFORTS

BEFORE THE

SUBCOMMITTEE ON COAST GUARD & MARITIME TRANSPORTATION

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE

U.S. HOUSE OF REPRESENTATIVES

OCTOBER 6, 2004

DEPARTMENT OF HOMELAND SECURITY
UNITED STATES COAST GUARD
STATEMENT OF MR. JEFFREY P. HIGH
ON THE
U.S. COAST GUARD'S MARITIME DOMAIN AWARENESS EFFORTS
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COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE
U.S. HOUSE OF REPRESENTATIVES
OCTOBER 6, 2004

Good morning Mr. Chairman and distinguished Members of the Committee. I am Jeff High, Director of the Coast Guard's Maritime Domain Awareness Program Integration Office. It is a pleasure to be here today to update you on our efforts to enhance awareness in the maritime domain.

Prior to the attacks of September 11, 2001, the Coast Guard's primary focus within the maritime domain had been on safety, law enforcement, the environment, and vessel traffic management. While we recognized security as an issue in our September 1999 Report to Congress on the Marine Transportation System, most national and international efforts within the maritime domain revolved around facilitating the safe and efficient movement of waterborne commerce, the interdiction of narcotics and illegal migrants, and trade compliance. Even before September 11, 2001, we realized that the maritime domain was one of the most valuable and vulnerable components of our national security, our marine transportation system, and our economic prosperity. While many ports and waterways have critical strategic military value, the commercial perspective is equally impressive, and the challenge is significant:

- Over 95% of overseas trade enters through U.S. seaports;
- Our seaports account for 2 billion tons and $800 billion of domestic and international freight each year;
- Approximately 9 million sea containers enter the U.S. via our seaports each year;
- 26,000 miles of commercially navigable waterways serving 361 U.S. ports;
- Seaborne shipment of approximately 3.3 billion barrels of oil each year;
- 6 million cruise ship passengers travel each year from U.S. ports;
- Ferry systems transport 180 million passengers annually;
- Waterways support 110,000 commercial fishing vessels, contributing $111 billion to state economies;
- 78 million Americans engaged in recreational boating;
- Some 8,100 foreign vessels making 50,000 U.S. port calls each year; and
- Domestic and international trade is expected to double in next 20 years.

Certainly, a terrorist attack incident against our marine transportation system has the potential to inflict a disastrous impact on global shipping, international trade, and the world economy. Since September 11, 2001, the Coast Guard, with the help of Congress and the Administration, has greatly expanded our maritime security capabilities and activities.

The world's oceans are global thoroughfares. A cooperative international approach involving partnerships of nations, navies, coast guards, law-enforcement agencies, and commercial shipping interests is essential – with all parties collaborating to confront broadly defined threats to our common and interdependent maritime security.

We are committed to working with local, state, national and international agencies and organizations as one team engaged in one fight. Having one department, the Department of Homeland Security (DHS), responsible for homeland security has helped make America more secure today.

Before proceeding, I think it would be helpful to clarify what is meant by the term "Maritime Domain Awareness" or MDA. MDA is the effective understanding of anything associated with the global maritime environment that could adversely impact the security, safety, economy or environment of the United States.

This definition was validated during the National MDA Summit held this past May. The Summit was co-chaired by the Deputy Secretary of Homeland Security, Admiral James Loy, and Assistant Secretary of Defense for Homeland Defense, the Honorable Paul McHale, and included approximately 30 interagency leaders across the government, including the Commandant of the Coast Guard, the Chief of Naval Operations, and leaders of the intelligence community, law enforcement, and virtually all agencies with maritime interests. MDA broadly supplements the maritime safety and security requirements of the varied stakeholders.

Enhanced Maritime Domain Awareness will be attained by leveraging and building on existing and far-ranging capabilities. Many of these capabilities reside in the disciplines of Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR). However, MDA will require innovative efforts in other areas. Among these new efforts will be unprecedented information sharing with at the federal, state and local levels, as well as with our international partners and the public and commercial sectors of the broadly based global maritime community.

The Role of the Coast Guard in Maritime Domain Awareness

As the lead federal agency for maritime homeland security, the Coast Guard has the primary responsibility within DHS to protect the U.S. maritime domain and our marine transportation system, and deny their use and exploitation by terrorists. The first and foremost strategy element of the Coast Guard's *Maritime Strategy for Homeland Security* is to "Increase Maritime Domain Awareness."

The U.S. Coast Guard also safeguards against a broad array of other maritime related threats - drug smuggling, illegal migration, international organized crime, natural resource exploitation, danger to those conducting commerce and other maritime operations, the spread of infectious diseases, and environmental degradation. Furthermore, the Coast Guard has an existing intelligence program, a command-and-control (C2) structure, and associated communications that can be built upon to improve coordination and integration of MDA capabilities.

MDA will also play a major contributing role as the Coast Guard implements many of the provisions of the Maritime Transportation Security Acts of 2002 and 2004, such as a National Transportation Security Plan; vulnerability assessments of vessels and facilities; area, vessel and facility security plans; incident response plans for vessels and facilities; and personnel background checks prior to issuing transportation security cards to individuals required to enter designated secure areas.

The Coast Guard's leadership in coordinating national efforts to enhance MDA capability does not require the exercise of command over other agencies' intelligence systems, surveillance and sensor capabilities, or communications as a condition for these assets to participate and contribute to MDA. Nor does this leadership role mean the Coast Guard intends to replicate these existing capabilities. Rather, its mission set, existing port and coastal resources, expertise, and unique status - a military service, a law-enforcement agency, a member of the Intelligence Community, and a regulator/facilitator of the maritime industry - allow the Coast Guard to interact with all members of the MDA community. The Coast Guard is well qualified to lead the effort to integrate and coordinate the development of a national MDA capabilities.

MDA is the critical enabler that allows the Coast Guard and its partners to work together to achieve their common objectives against a vast array of threats confronting the United States, while sustaining the free flow of commerce and maintaining individual freedoms.

National-level Leadership

The demand for assertive and comprehensive planning, leadership and multi-agency coordination by the Coast Guard has greatly increased. Efficient and effective efforts require more formal structure and reduced ad-hoc activity. In recognition of this, the Coast Guard established a Maritime Domain Awareness Program Integration Office (PIO) with the following strategic goals:

- Lead collaborative comprehensive planning efforts ... Coast Guard, Department of Homeland Security, National, International
- Create forums and relationships to enhance understanding, provide direction, and optimize use of resources ... public and private sector stakeholders
- Transform and integrate existing and future capabilities ... sensors, platforms, information systems, command and control
- Facilitate and align efforts to collect, analyze, and disseminate timely information
- Obtain resources ... provide interim capabilities and sponsor future capabilities

In addition, the Commandant established an MDA Steering Committee (MDASC), which includes Navy liaison members, to facilitate discussion and coordination of the activities of the MDA Program Integration Office.

MDA has received high level interest and support within the Administration. The Coast Guard and Navy have been jointly tasked with enhancing MDA. We are improving our coordination with the Navy and other maritime stakeholders within the federal government. A senior-level MDA Senior Steering Group (SSG) has recently been formed to develop a coordinated approach for all MDA-related activities. The SSG is co-chaired by Deputy Secretary James Loy (DHS) and the Honorable Paul McHale (DOD) and includes senior representatives from interested maritime stakeholders. The SSG will enhance coordination of all MDA-related initiatives to achieve more effective results. Specific responsibilities include:

- Creating a National MDA Plan;
- Designing the enterprise architecture for shared situational awareness; and
- Engaging other partners (state / local / industry / international)

The SSG conducted its first meeting on September 24, 2004. The SSG established seven working groups and assigned individual member agencies to support these working groups.

The Process of Awareness

Comprehensive understanding of the maritime domain involves specific knowledge of vessels, generic port infrastructures, transshipment facilities, maritime approaches, waterways, anchorages, fishing grounds, rookeries, choke-points, shipping lanes, and transit corridors, as well as a diverse array of critical infrastructure - from offshore oil platforms in the Gulf of Mexico to the Statute of Liberty. This awareness must become increasingly comprehensive as potential threats approach the U.S. coast, ports, and inland waterways. We must know what is "normal" and what is "not normal" throughout the marine transportation system and maritime domain – from our inland waterways and ports to the high seas – so we can best assess potential risks.

Effective MDA involves identifying threats as soon as possible and far enough away from our coastline to appropriately respond to eliminate or mitigate the risk. MDA includes the collection, analysis and dissemination of information and intelligence to facilitate operational or tactical responses. It is a dynamic system of people, technology, processes, and doctrine that feeds the operational commanders and field unit response and interdiction assets, and in turn, receives feedback from them on situational awareness.

Building a national MDA capabilities requires both a process and a system. In the most fundamental terms, the MDA process consists of receiving maritime data, information, and intelligence, both classified and unclassified; fusing, correlating, analyzing, and interpreting the collected material; and disseminating effective assessments, actionable intelligence, and relevant knowledge to appropriate federal, state, local, private, and international stakeholders in a usable format. The system required to facilitate this process is an enterprise architecture that integrates the C4ISR activities of the United States and its international partners. The system includes cooperation and information exchange with and among the public, private and commercial sectors at all levels.

The Common Operational Picture

The blending of various assessments, actionable intelligence, and our knowledge of maritime activities form a Common Operational Picture (COP). The COP is a display of critical information shared by multiple interests. The COP provides a geospatial display, with referenced overlays and data enhancements. The COP environment may include distributed data processing, data exchange, collaboration tools, and communications capabilities. It will include but is not limited to geographic information systems data, assets, activities and elements; planning data; readiness data; intelligence, reconnaissance and surveillance data; imagery; and environmental data. It will contain advanced display technologies and decision support tools including software intelligent agents with anomaly detection capabilities.

The COP will be shared by various partners within the maritime domain. A filtered view of the COP will be shared with civilian law enforcement and other government agencies that do not hold Department of Defense (DOD) clearances but do handle Sensitive But Unclassified (SBU)

data. It also can be shared with allies and coalition partners at the appropriate level of security access. The COP will facilitate collaborative operational planning at every echelon: local, regional, national and international.

Enhancing our Capability

Some of the capabilities necessary to enhance MDA are already in place or are being built, including some of the systems the Chairman asked the Coast Guard to address in this hearing. Some will be developed in the near future. Necessary actions to implement MDA include web-enabling the various agencies involved; establishing open architecture systems and standards to allow rapid upgrades and integration; building common data bases to widely share information; implementing standard user interfaces to access information; and establishing web portals that will allow users to pull data from common servers.

Building MDA will require monitoring vessels, cargo, people and specified areas of interest in the global maritime environment. It will include maintaining and accessing data on vessels, facilities and infrastructure. It will require collecting, analyzing and disseminating critical information to decision makers to facilitate effective understanding of the global environment. All technologies are being explored to achieve these goals. Some technologies, like Automatic Identification System (AIS), are mature and can be quickly exploited, while others, like the ability to detect anomalies in vessel behavior, require a great deal of investment and research.

AIS, in accordance with an internationally accepted standard for equipment, is currently being carried aboard thousands of ships worldwide. The Coast Guard currently has AIS capability in the Vessel Traffic Service (VTS) ports of New York, New Orleans, Berwick Bay, Houston/Galveston, Los Angeles/ Long Beach, Prince William Sound, and Sault Ste. Marie. Equipment to provide AIS capability in San Francisco, Puget Sound, and Port Arthur is planned for installation by the end of the calendar year. There are also selected areas of the coastline, including Alaska and the Gulf of Mexico, where we are pursuing accelerated AIS deployment which will be incorporated into our Nationwide AIS major acquisition project, an initiative to achieve AIS capability throughout the U.S.

We are actively engaged in options to leverage AIS capability beyond a terrestrial-based infrastructure. We recently contracted to install an AIS receiver on board a commercial satellite to receive and forward AIS signals from space. We expect the satellite to be launched in 2005. With this capability, the Coast Guard will be able to collect and process AIS data well beyond the coast of the United States in a cost effective and timely fashion.

We have also entered into an agreement with the National Oceanic and Atmospheric Administration (NOAA) to install AIS receivers on offshore data buoys. The NOAA National Data Buoy Center's (NDBC) Marine Observations Network is a fleet of environmental monitoring buoys and coastal stations located through out the U.S. coastal and ocean zones. These operational buoys and stations can be found in major estuaries and through out the EEZ, including Alaska and Hawaii. Under a Memorandum of Agreement with the NDBC, the Coast Guard is sponsoring the augmentation of these buoys and coastal stations with AIS systems and the integration of the stations into the USCG AIS network.

AIS data received from marine vessels (identification, position, and other voyage-related data) that are within radio range of these NDBC stations will be transmitted to the NDBC AIS Data Assembly Center and processed and transmitted on the USCG and the National AIS Infrastructure. AIS systems on NDBC platforms will significantly enhance our National AIS Infrastructure and the Common Operational Picture (COP). Plans are to eventually convert all 70 buoys and selected coastal and estuarine stations. Initial deployment of AIS receivers will occur in early 2005, as these offshore buoys and stations are scheduled for regular servicing.

NOAA is actively involved with the Coast Guard in the international and national AIS standards setting activities. These national and international standards coupled with the AIS two-way communications system offers opportunities to NOAA as well. With the development of a NOAA Voluntary Observing Ship (VOS) automated data collection system, the AIS enabled NDBC buoys and coastal stations will be capable of receiving environmental measurement data from vessels that are participating in the VOS program. The data captured through AIS Data Link will be transmitted to the NDBC Data Assembly Center for quality control processing and release to the NOAA operational Data Stream. With additional modest technical development, NOAA will be able to transmit environmental information, safety and regulatory - related messages and warnings to ships within radio range of NDBC stations through the AIS Vessel Data Link.

Our communication and offshore asset recapitalization efforts are essential to the Coast Guard's ability to provide higher levels of maritime homeland security and enhanced maritime domain awareness. The Rescue 21 and Deepwater recapitalization projects will provide high capacity, integrated, interoperable communications systems that can rapidly transmit information to the COP and provide complete communications coverage. Information from Rescue 21 will help complete Deepwater's COP and will play a critical role in allowing commanders to make effective risk-based decisions when directing and coordinating homeland security and other large operations in ports, waterways, and coastal areas. With asset tracking, complete coverage and an integrated, state-of-the market communications network, the Coast Guard will be better positioned to identify and quickly respond to threats to maritime safety and security.

In the interim, we have taken action to provide more immediate capabilities to our operational commanders and interagency partners. The Coast Guard has already established systems to track vessel movements within U.S. waters through the National Vessel Movement Center and Inland River Vessel Movement Center and is working to expand these capabilities. Additional major ongoing initiatives include short and long-range vessel tracking requirements and capabilities, joint use Sector Command Centers with the Navy in Norfolk and San Diego, collocating our Sector Command Center in Charleston with the Justice Department funded Charleston Harbor Operations Center, and our Sector Command Center and Surveillance Test bed in Miami. Coast Guard Intelligence efforts to improve MDA include Intelligence Coordination Center (ICC) and Coastwatch, establishing Maritime Intelligence Fusion Centers, and Field Intelligence Support Teams that operate in our larger ports. The Coast Guard is also monitoring external initiatives, such as other agency funded grants and research and development initiatives, to ensure linkages are maintained and best practices are captured.

Vessel tracking efforts focus principally on technology, personnel, information exchange, and supporting business processes and doctrine to support the persistent surveillance of all vessels along the maritime margins of the U.S. coastline, including inland waters, as well as passenger and cargo vessels greater than 65' in length out to 2,000 nm, to assess potential threats. There is

also a need for more global tracking with partnering Governments to better identify and analyze vessel behavior based on historical trends and characterization of normal shipping patterns/routes. This track history will facilitate a more comprehensive risk evaluation of Vessels of Interest (VOIs) that depart from known habits or expected behaviors, and will support critical port operations and boarding teams in carrying out their responsibilities.

Notice of Arrival (NOA) data indicate that on an average day, more than 1,000 vessels over 300 GT approach the U.S. from foreign ports carrying goods and passengers, while another 350 merchant ships are already present in our ports. An additional untold number of vessels traverse our Exclusive Economic Zone (EEZ) on coastwise trade bound for non-U.S. ports, and are not required to report their course/destination to U.S. authorities since they do not plan to arrive at a U.S. port. Overall, an estimated 5,000 commercial vessels are within 2,000 nm of the U.S. at any time.

It is much more difficult to detect, monitor and intercept targets which do not abide by existing agreements. To handle those targets we have developed and are continuing to develop and improve our capabilities to attain a persistent maritime awareness capability. The Coast Guard is pursuing a wide variety of means to track cooperative and potentially non-cooperative vessels calling on, or operating near, the United States.

We are working closely with our partners in the Department of Defense, Department of Homeland Security and elsewhere, to evaluate sensors and platforms that will enhance our ability to detect, identify and track vessels. The Coast Guard is actively engaged in identifying a system or mix of systems to provide a wide area surveillance capability. Included in this mix are long-range radar systems, unmanned aerial vehicles (UAVs), High Altitude Long Endurance (HALE) and Lighter than Air (LTA) airships. Existing capabilities within the government domain will be integrated into a final solution.

The Coast Guard is also leading efforts at the International Maritime Organization (IMO) to develop an international requirement for long range tracking to provide enhanced visibility of these vessels for flag, port and coastal states. At the same time, we are evaluating options to obtain information on vessel positions and intentions through other sources, and cooperative arrangements with the maritime industry.

Extending our surveillance and detection capabilities will provide more time to investigate potential threats and generate an appropriate and timely response. We will continue to develop improved systems and capabilities with the intent of increasing the amount of coverage as we grow from securing specific locations of interest to areas of total coverage.

Conclusion

Enhancing MDA will require a significant investment in time, personnel, and other resources to develop and maintain systems, procedures and relationships to limit, prevent, and apprehend those who would use the world maritime environment to break the law or commit terrorism.

It is crucial for the members of the MDA community, whether federal, state, or local governments, or partners in private industry, to work together to achieve the full scope of capability that permits the effective understanding of anything in the global maritime

environment that could adversely affect our security, safety, economy, or environment. MDA is the critical enabler that will allow our National strategies to succeed in their objectives of prevention, protection, response, and recovery against a vast array of threats confronting the safety and security of the United States, while sustaining the free flow of commerce and maintaining our freedoms.

Thank you for the opportunity to discuss the Coast Guard's efforts to enhance Maritime Domain Awareness. We look forward to working with Congress to create an effective, integrated, collaborative worldwide maritime intelligence network that provides persistent Maritime Domain Awareness to safeguard our Nation. I will be happy to answer any questions you may have.

APPENDIX 2

Coast Guard High Altitude/Satellite AIS Monitoring Plans

10 Dec 04
CDR Brian Tetreault, AIS Programs Officer
Commandant, USCG (G-OC/MDA)

Excerpts from:

- Maritime Domain Awareness (MDA) Functional Plan, Annex A (draft 02 Nov 04)
- MDA User Requirements (draft 08 Nov 04)

MDA Functional Plan, Annex A, Appendix 1 – Automatic Identification Systems:

"1.a. Capability Description. AIS is a data transmission system for ship-to-ship and ship-to-shore communication approved by the International Maritime Organization (IMO)... AIS shipboard transceivers continually transmit and receive vessel information over VHF maritime frequencies, typically limited to line-of-sight... Starting in 2002, the IMO began requiring vessels on international voyages to carry AIS equipment. By December 31, 2004 thousands of vessels that call on US ports will be required to carry this equipment. To effectively understand vessel activity in the maritime domain, the Coast Guard must detect, classify, identify and track vessels approaching or operating in US waters. AIS can provide tracking of AIS-equipped vessels operating in the maritime domain where little or no vessel tracking capability currently exists. AIS is a persistent vessel tracking system that will identify cooperative vessels and help the Coast Guard protect them, as well as sort out potentially suspicious vessels through their identity or activity."

...

"1.a.(1) Current AIS capability efforts:"

...

"d. A contract has been signed with Orbcomm to put AIS receive capability on a commercial low earth orbit satellite."

...

"1.b. Collection. ...Receive only AIS equipment will be used for vessel tracking purposes, as they will only be able to receive reports that vessels in their coverage area are transmitting. ...AIS equipment may be mounted on shore based towers, airborne platforms or space-based platforms."

MDA Functional Plan, Annex A, Appendix 2 –Long Range Identification and Tracking (LRIT)

"1.a. Capability Description. The purpose of the LRIT system, in support of the Coast Guard's Maritime Domain Awareness (MDA) effort, is to identify and track vessels. ...[LRIT] should provide the USCG, as a Port State authority, the capability to track vessels 96 hours in advance of their arrival at a US port. ...[LRIT] should provide the capability to the USCG, as the Flag State authority, to track US vessels worldwide. The authority for the United States, or any Coastal State, to track foreign flag vessels on the high seas or on innocent passage navigating its coastal waters, is under consideration by the International Maritime Organization (IMO). The system should be capable of obtaining, as a minimum, vessel identification, location, crew lists, cargo, and destination information."

...

"1.b. Collection."

...

"(3) Space based AIS. AIS transmissions can be monitored from a low earth orbiting satellite...
(4) High altitude long endurance AIS. This capability involves the monitoring of AIS transmissions from lighter than air ships/high altitude balloons. These new platforms could sustain a payload that may include radars, cameras, AIS receivers and other sensors to detect surface ship tracks over a 400 nm radius."

...

"2.b. ...Deployment Strategy.

(1) Evaluate high altitude (non-space based) platforms. ...the use of high altitude balloons as a sensor platform are being evaluated (See Appendix 6 to Annex A) [excerpts following]. This technology is capable of reaching an altitude of approximately 65,000 feet... These new platforms could sustain a payload that may include radars, cameras, AIS receivers, and other sensors to detect surface vessels over an approximate radius of 400 nm."

...

DRAFT MDA Functional Plan, Annex A, Appendix 6 – Unmanned Aerial Vehicle Technology

"1. UNMANNED AERIAL VEHICLE (UAV) TECHNOLOGY. US National and Maritime Security Strategies express a "distant detection" objective to know what surface vessels are within the broad ocean area from the territorial waters out to 2,000 nm off shore. The "close detection" core objective is to detect, classify, identify, and track vessels when they are within 300 nm of US shores. ...To facilitate this capability unmanned aerial vehicle (UAV) technology could be employed by the year 2010... There are two possible uses of UAV technology: First, is to provide a Broad Ocean Surveillance System (BOSS) for the US Coast Guard ...second, provide coastal patrol..."

...

"(4) Identification Beacon.
The need for positive identification of most vessels from long range is a much needed adjunct system regardless of the mix of surveillance platforms.
...This need is already fulfilled, in some measure, by the requirement for all large commercial vessels and tugs to carry the Automatic Identification System (AIS) transponder (See Appendix 1 to Annex A) [excerpts above]. High altitude airships (HAAs) and other UAVs would provide the ability to monitor the AIS signal at significant distances, i.e. greater than 1000 nm from our coasts, depending on the actual altitude and position of the airframe. ...The best sensor system in the world will have a very difficult time sorting the operational picture until the ability exists to monitor AIS at long range..."

DRAFT MDA User Requirements

Note: The following specific requirements were taken from the overall MDA requirements document, which was derived from an essential task list (ETL) developed by operational users of MDA. While the requirements don't specifically mention AIS, the capability required to meet these requirements would most likely involve long range AIS detection which can only be done persistently by high altitude or space based platforms.

ETL: 1.0 Persistently monitor vessels and other craft in the global maritime environment.
- 1.1 Persistently monitor commercial vessels and craft (White Force or Red Force) vessels in the global maritime environment.
- 1.2 Persistently monitor private (recreational) vessels in the global maritime environment.

ETL 4.0 Persistently monitor all identified areas of interest in the global maritime environment:
- 4.2.12.3.2 Persistently monitor and support all geographic MDA Vessel Tracking Issues.
- 4.2.12.3.2.1 Track vessels long-range (24 to 2000 miles).
- 4.2.12.3.2.2 Track vessels short-range (inland/internal waters, and out to 24 miles).
- 4.2.12.3.2.3 Track all vessels inbound to the U.S. after receipt of their Notice of Arrival (NOA).

APPENDIX 3

U.S. Department of Homeland Security

United States Coast Guard

Commandant
United States Coast Guard

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Washington, DC 20593-0001
Staff Symbol: CG-622
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12 Nov 2004

TO: Executive Secretary, IRAC

FROM: Joseph D. Hersey, Jr.
USCG IRAC Representative J Hersey Jr.

SUBJECT: Clearing Other Use of 162.025 MHz in Support of Navigation Safety and Maritime Domain Awareness

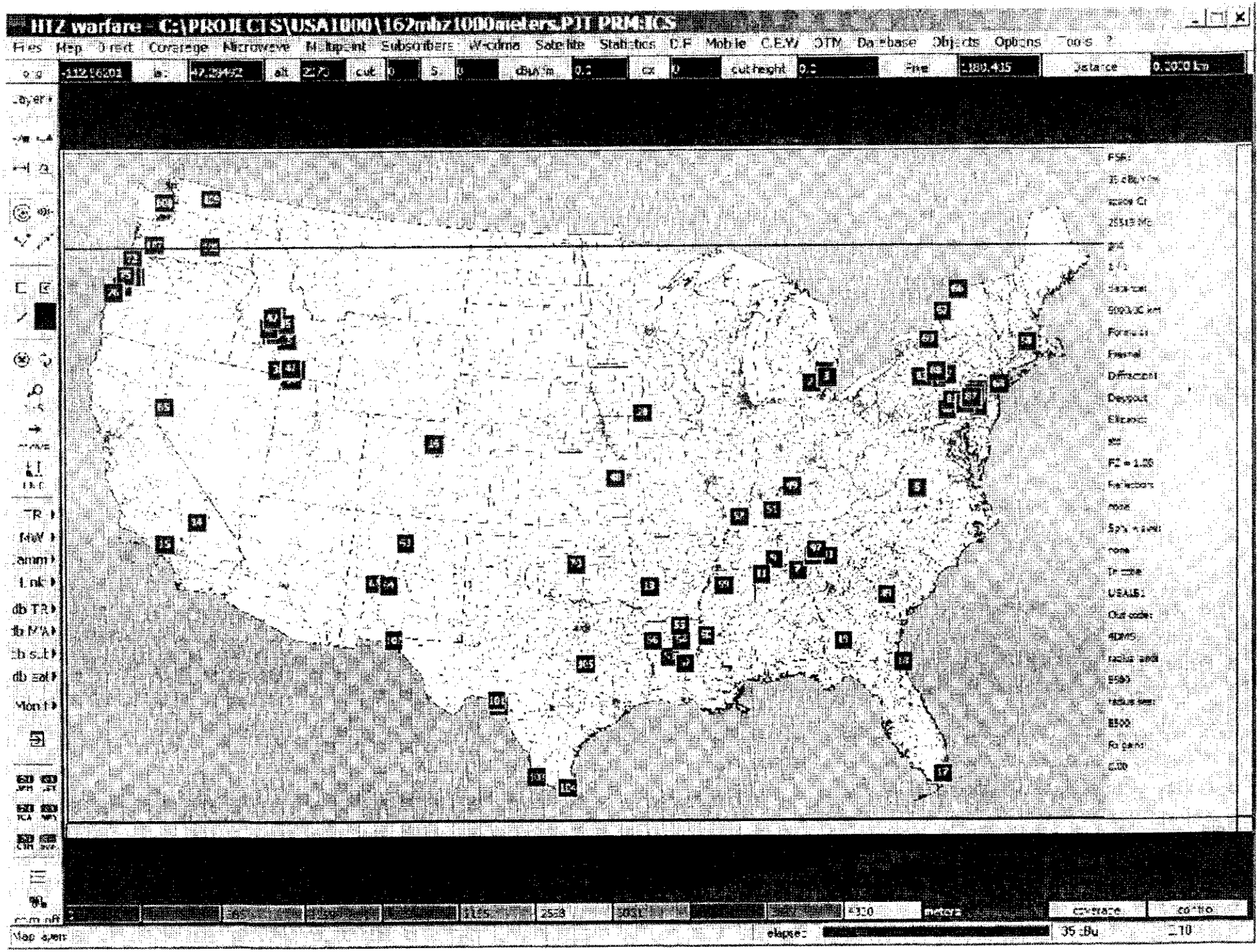
1. As described in Doc 33189/1 and several other IRAC documents within the past five years, ships subject to the Maritime Transportation Security Act and Safety of Life at Sea (SOLAS) Convention are required to carry Automatic Identification System (AIS) broadcast transponders operating on the frequencies 161.975 and 162.025 MHz. SOLAS in particular requires passenger vessels over 150 tons and most other vessels over 300 tons carry AIS, phased in during the period 1 July 2003 to 31 December 2004 (see http://www.navcen.uscg.gov/enav/ais/AIS_carriage_reqmts.htm). These ships operate worldwide and in US coastal and inland waterways. AIS is used on these ships for intership navigation, and by the US Coast Guard for maritime domain awareness, one element of our homeland security mission established since September 11th. In order to meet this maritime domain awareness requirement, the Coast Guard is installing AIS base stations in vessel traffic service areas, coastal areas and selected inland waterways, and to extend range is installing AIS receivers on offshore NOAA data buoys, on oil platforms, on aircraft and UAVs, and has contracted with Orbcomm to install an AIS reception capability on their next satellite planned for launch by the end of 2005 and operation by April 2006 (see http://www.fcw.com/fcw/articles/2004/1108/tec-coastsat-11-08-04.asp).

2. Land mobile radios operating on 162.025 MHz, including those operating after 31 Dec 2004 on a narrowbanding waiver, can if within line of sight of a ship interfere with their navigation. These radios can also interfere with our monitoring ship transmissions for maritime domain awareness purposes, if within line of sight of our terrestrial, aircraft, UAV or satellite receivers. For this reason, the FCC in IRAC Doc. 337972 is considering designating 161.975 MHz for AIS exclusively, and NTIA at our request plans to do the same for 162.025 MHz.

3. For these reasons, I request the IRAC ask FAS to deny continued waivers for and clear all land mobile and other non-AIS systems operating on 162.025 MHz as follows:

a) within 50 miles or significant interference range of major navigable waters by 31 Dec 2004,
b) within 200 miles of all navigable waters by 31 Dec 2005, and
c) all others by 31 Dec 2006.

Enclosure: List of interfering stations


HTZ warfare - C:\PROJECTS\USA1000\162mhz1000meters.PTI PRMETS
Files Map Orient Coverage Microwave Multipoint Subscribers Wireless Satellite Statistics CDF Mobile CEV OTM Database Objects Options Tools ?
Layers
meters
coverage
elapsed

162.0125-162.0375 MHz

Class	Serial Number	Frequency	Power	Power2	Power3	Power4	Power5	Power6	Bureau	XSC	XAL
U	NG 038307	M162.0125-162.2	W200						FCC	MI	DETROIT
U	NG 038335	M162.0125-162.2	W200						FCC	MI	CHELSEA PROVING GROUNDS
U	NG 038363	M162.0125-162.2	W200						FCC	MI	AUBURN HILLS
U	NG 028780	M162.0125-173.2	W250	W250	W250				FCC	VA	LYNCHBURG
U	NG 028785	M162.0125-173.2	W250	W250	W250				FCC	VA	LYNCHBURG
U	A 790017	M162.025	W80	W60					F4	ID	BALD MOUNTAIN
U	A 790018	M162.025	W10	W60					F4	ID	BASIN BUTTE
U	A 790019	M162.025	W5	W60					F4	ID	BELL MOUNTAIN
U	A 790020	M162.025	W40	W60					F4	ID	BIG SMOKEY
U	A 790021	M162.025	W5	W60					F4	ID	HORTON PEAK
U	A 790022	M162.025	W5	W60					F4	ID	IRON MOUNTAIN
U	A 790023	M162.025	W5	W60					F4	ID	LICK CREEK
U	A 790025	M162.025	W60	W60					F4	ID	MALTA
U	A 790026	M162.025	W80	W80					F4	ID	MOUNT HARRISON
U	A 790028	M162.025	W5	W60					F4	ID	SHEEP MOUNTAIN
U	A 790029	M162.025	W5	W60					F4	ID	STEEL MOUNTAIN
U	A 790030	M162.025	W5	W60					F4	ID	ZUMWALT
U	A 830627	M162.025	W30						F4	ID	ID
U	A 841817	M162.025	W50	W60					F4	ID	REDFISH LAKE
U	A 841819	M162.025	W5	W60					F4	ID	GEORGE PEAK
U	A 841820	M162.025	W5	W60					F4	ID	GRANDJEAN
U	A 841822	M162.025	W5	W60					F4	ID	BOWERY
U	A 841827	M162.025	W5	W60					F4	ID	MAGIC MOUNTAIN
U	A 930441	M162.025	W10						F6	OR	CORVALLIS
U	A 934969	M162.025	W35	W5					F4	ID	ID
U	A 950862	M162.025	W35	W35	W5				F4	ID	BALD MOUNTAIN
U	A 950864	M162.025	W35	W35	W5				F4	ID	BASIN BUTTE
U	A 950870	M162.025	W35	W35	W5				F4	ID	IRON MOUNTAIN
U	A 950873	M162.025	W35	W35	W5				F4	ID	MAGIC MOUNTAIN
U	A 950876	M162.025	W35	W35	W5				F4	ID	MOUNT HARRISON
U	A 950885	M162.025	W35	W35	W5				F4	ID	BIG SMOKY GUARD STATION
U	A 950886	M162.025	W35	W35	W5				F4	ID	BOWERY GUARD STATION
U	A 950887	M162.025	W35	W35	W5				F4	ID	GRANDJEAN GUARD STATION
U	A 950888	M162.025	W35	W35	W5				F4	ID	MALTA WORK CENTER
U	A 950889	M162.025	W35	W35	W5				F4	ID	REDFISH LAKE VISITOR CEN
U	A 960256	M162.025	W60	W5					F6	OR	MARYS PEAK

Class	Serial Number	Frequency	Power	Power2	Power3	Power4	Power5	Power6	Bureau	XSC	XAL
U	A 960257	M162.025	W60	W5					F6	OR	TABLE MOUNTAIN
U	A 960258	M162.025	W60	W5					F6	OR	WINCHESTER HILL
U	A 960260	M162.025	W60	W5					F6	OR	MOUNT HEBO
U	A 960261	M162.025	W50	W60	W5				F6	OR	MAPLETON
UE	AF 862605	M162.025	W10							FL	HOMESTEAD
UE	AF 873676	M162.025	W25	W10						OK	TINKER
UE	AR 818836	M162.025	W60						CE	TX	EL PASO
UE	AR 818837	M162.025	W90						CE	TX	EL PASO
UE	AR 857497	M162.025	W60	W60					CE	MS	VICKSBURG
UE	AR 857515	M162.025	W60						CE	LA	VICK
UE	AR 887626	M162.025	W60						CE	MS	SARDIS
UE	AR 887634	M162.025	W60						CE	MS	LEXINGTON
UE	AR 887640	M162.025	W60						CE	LA	PORT ALLEN
UE	AR 887642	M162.025	W60						CE	LA	POINT A LA HACHE
UE	AR 887712	M162.025	W100	W40	W5				PA	AK	ANCHORAGE
UE	AR 897148	M162.025	W60						CE	LA	MARKSVILLE
UE	AR 897149	M162.025	W60						CE	LA	COLFAX
UE	AR 897151	M162.025	W60						CE	LA	MANSFIELD
UE	AR 897154	M162.025	W60						CE	LA	HAILE
UE	AR 967053	M162.025	W60						CE	AR	MT PINE
UE	AR 967154	M162.025	W60						CE	AR	MT PINE
UE	AR 967275	M162.025	W60						CE	LA	COLUMBIA
U	C 750322	M162.025	W4						ERL	CO	BOULDER
U	DOE 873247	M162.025	W6	W6					AL	NM	LOS ALAMOS
U	DOE 934020	M162.025	W100						R	WA	HANFORD AREA
U	DOE 944570	M162.025	W125	W125					S	SC	SAVANNAH RIVER SITE
U	I 851896	M162.025	W50	W50					S1	WA	WINTHROP
U	I 851897	M162.025	W50	W50					S1	WA	QUILCENE
UE	I 950551	M162.025	W50	W50						KS	LAWRENCE
UE	I 963992	M162.025	W25	W25	W25				S1	CA	CA
U	IBWC870706	M162.025	W50	W50	W50					TX	HARLINGEN
U	IBWC972678	M162.025	W80							TX	AMISTAD DAM
U	IBWC972679	M162.025	W80	W80						TX	AMISTAD DAM
U	IBWC972680	M162.025	W80							TX	COMSTOCK 1
U	IBWC972681	M162.025	W80	W80						TX	COMSTOCK 1
U	IBWC980235	M162.025	W50	W50	W50					TX	FALCON DAM

Class	Serial Number	Frequency	Power	Power2	Power3	Power4	Power5	Power6	Bureau	XSC	XAL
UE	J 010951	M162.025	W110	W110					FB	NJ	MONTANA MTN
UE	J 881581	M162.025	W100	W100					FB	PA	KEFFERS
UE	J 881627	M162.025	W110	W110					FB	PA	LION HILL
UE	J 881681	M162.025	W110	W110					FB	PA	SOUTH MOUNTAIN
UE	J 881683	M162.025	W110	W110					FB	PA	TOWER HILL
UE	J 881686	M162.025	W110	W110					FB	PA	SKYLINE DRIVE
UE	J 881758	M162.025	W100	W100					FB	PA	BLOSS MOUNTAIN
UE	J 881763	M162.025	W100	W100					FB	PA	SOUTH MOUNTAIN
UE	J 881764	M162.025	W110	W110					FB	PA	FT WASHINGTON
UE	J 881768	M162.025	W100	W100					FB	PA	HARRISBURG
UE	J 882265	M162.025	W110	W110					FB	PA	KELLOGG MOUNTAIN
UE	J 980150	M162.025	W110	W110					FB	PA	ALLENTOWN
UE	J 990602	M162.025	W110	W110					FB	PA	PAXINOSA MTN
U	L 790004	M162.025	W5							NV	RENO
U	L 800015	M162.025	W15	W2						NY	SO BRONX
U	L 890001	M162.025	W25	W25	W5					GA	ALBANY
U	L 990001	M162.025	W45	W45	W5					MA	GRAFTON
UE	N 883363	M162.025	W10	W5						FL	MAYPORT
U	NASA770053	M162.025	W35	W5					JPL	CA	PASADENA
U	NASA770054	M162.025	W25	W25	W25				DFRC	CA	EDWARDS
U	NASA770056	M162.025	W2.5						JPL	CA	TABLE MOUNTAIN
U	NASA770058	M162.025	W80						JPL	CA	GOLDSTONE
U	NSF 760006	M162.025	W25	W2	W5	W10	W20	W25	NRAO	NM	AUGUSTIN
U	NSF 890020	M162.025	W25	W5	W25				NRAO	NM	SOCORRO
U	TRAN030000	M162.025	W50	W25	W50	W25			SL	NY	MESSENA
U	TRAN030001	M162.025	W50	W25	W50	W25			SL	NY	ORLEANS
U	TRAN030002	M162.025	W50	W25	W50	W25			SL	NY	SODUS
U	TRAN045001	M162.025	W12						TSC	WA	KALAMA
U	TRAN045003	M162.025	W12						TSC	WA	KALAMA
U	TVA 931621	M162.025	W60							USA	TVA AREA
U	TVA 942610	M162.025	W10							AL	BELLEFONTE
U	TVA 942611	M162.025	W10	W10						AL	BELLEFONTE
U	TVA 942676	M162.025	W10							AL	BROWNS FERRY
U	TVA 942678	M162.025	W10	W10						AL	BROWNS FERRY
U	TVA 942762	M162.025	W60	W60						TN	APALACHIA
U	TVA 942763	M162.025	W60	W60	W60					TN	APALACHIA

Class	Serial Number	Frequency	Power	Power2	Power3	Power4	Power5	Power6	Bureau	XSC	XAL
U	TVA 942843	M162.025	W5							AL	COLBERT
U	TVA 942844	M162.025	W5	W5						AL	COLBERT
U	TVA 942845	M162.025	W5							KY	PARADISE
U	TVA 942846	M162.025	W5	W5						KY	PARADISE
U	TVA 943624	M162.025	W10							TN	SEQUOYAH
U	TVA 943625	M162.025	W10	W10						TN	SEQUOYAH
U	TVA 943757	M162.025	W10							TN	WATTS BAR
U	TVA 943758	M162.025	W10	W10						TN	WATTS BAR
U	TVA 973122	M162.025	W45							KY	SHAWNEE
U	TVA 973158	M162.025	W60	W60						TN	APALACHIA DAM
U	TVA 973162	M162.025	W60	W60	W60					TN	APALACHIA DAM
UE	USPS950078	M162.025	W5						MAIL	KY	LOUISVILLE
UE	VA 840003	M162.025	W90	W35					VHA	IA	DES MOINES
U	VA 900182	M162.025	W100						VHA	TX	MARLIN
UE	I 963000	M162.03125	W.01							USP	USP